



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,504	10/24/2003	Forrest R. Goodson	D-1471 (03-521)	2666
34704	7590	07/27/2005	EXAMINER	
BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			FEELY, MICHAEL J	
			ART UNIT	PAPER NUMBER
			1712	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/694,504

Applicant(s)

GOODSON ET AL.

Examiner

Michael J. Feely

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-8 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0305.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Almen (US Pat. No. 6,379,799).

Regarding claims 1-5, Almen discloses: (1) a composite material (Abstract; column 5, lines 58-62) comprising: a matrix of an epoxy resin and a hardener (Abstract), the epoxy resin and the hardener being essentially free of methylenedianiline (MDA) and vinylcyclohexene dioxide (Abstract; column 4, line 44 through column 5, line 57); and a fiber reinforcement within the matrix (Abstract; column 8, lines 40-56), wherein the matrix has a glass transition temperature of at least 250°F dry (Abstract; Examples); and the resin has a pre-hardening mixed viscosity of 500-1500 cP at 75°F (column 9, lines 9-20; Examples);

(2) wherein the fiber reinforcement comprises an intermediate modulus, high tensile strength, carbon fiber (column 8, lines 40-53);

Art Unit: 1712

(3) wherein the material is used in a filament-wound pressure vessel (column 5, lines 58-62); (4) wherein the vessel is a space vehicle or missile combustion chamber or propellant or oxidizer tank (column 5, lines 58-62); and (5) wherein the matrix hardens to B-stage in less than 20 hours at a temperature of 100°F-150°F (column 7, line 58 through column 8, line 12; Examples).

Regarding claims 6 and 8, Almen discloses: (6) a method for manufacturing a composite material (Abstract) comprising: forming a blend of: a resin selected from the group consisting of low viscosity bisphenol A/epichlorohydrin resins, low viscosity cycloaliphatic resins, and low viscosity tetra-functional resins (column 5, line 63 through column 6, line 16); and a hardener selected from the group consisting of liquid aromatic amine hardeners effective to provide glass transition temperatures in excess of 250°F, the blend being essentially free of methylenedianiline (MDA) and vinylcyclohexene dioxide (column 5, lines 15-48); embedding fiber reinforcement in the blend (column 7, line 58 through column 8, line 5); and curing the fiber-reinforced blend to form the composite material (column 9, lines 6-12);

(8) wherein the blend further comprises a liquid cure catalyst comprising alkylated onium salt, substituted sulfur compound, substituted sulfide, ethylthioethanol, and fluoroboric acid (column 6, lines 17-31).

In all of the above claims, Almen does not explicitly disclose: (a) an inter-laminar shear strength of at least 6.5 ksi dry at 75°F and at least 3.5 (or 3) ksi dry at 250°F; and (b) a fiber tensile strength of at least 650 ksi. It has been found that, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the

Art Unit: 1712

properties applicant discloses and/or claims are necessarily present —*In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). In light of this and the fact that Almen satisfy all of the material limitations of the instant invention, it appears that these properties would have been inherently present in the composition of Almen.

Furthermore, because Almen uses his composite in the same field of endeavor (space/air craft) as that of the instant invention, one of ordinary skill in the art would be motivated to form their composition with such high performance properties.

Therefore, if not inherently present in the composition of Almen, one of ordinary skill in the art at the time of the invention would have been motivated to formulate the composition of Almen to have the claimed strength properties because spacecraft and aircraft materials require high performance properties, including inter-laminar strength and tensile strength.

4. Claims 1-8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kamae et al. (US Pat. No. 6,410,127).

Regarding claims 1-5, Kamae et al. disclose: (1) a composite material (Abstract; column 24, line 64 through column 25, line 5) comprising: a matrix of an epoxy resin and a hardener (Abstract), the epoxy resin and the hardener being essentially free of methylenedianiline (MDA) and vinylcyclohexene dioxide (Abstract; column 5, line 6 through column 12, line 67); and a fiber reinforcement within the matrix (Abstract; column 13, lines 40-48), wherein the matrix has a glass transition temperature of at least 250°F dry (Abstract; column 3, line 35 through column 4, line 20; Examples); and the resin has a pre-hardening mixed viscosity of 500-1500 cP at 75°F (Abstract; column 3, lines 13-34 — *inherent overlap when viscosity is reduced at 75°F*);

Art Unit: 1712

(2) wherein the fiber reinforcement comprises an intermediate modulus, high tensile strength, carbon fiber (column 13, lines 40-48);

(3) wherein the material is used in a filament-wound pressure vessel (column 24, line 64 through column 25, line 5); (4) wherein the vessel is a space vehicle or missile combustion chamber or propellant or oxidizer tank (column 24, line 64 through column 25, line 5); and (5) wherein the matrix hardens to B-stage in less than 20 hours at a temperature of 100°F-150°F (Abstract; column 3, line 35 through column 4, line 20; Examples).

Regarding claims 6-8, Kamae et al. disclose: (6) a method for manufacturing a composite material (Abstract) comprising: forming a blend of: a resin selected from the group consisting of low viscosity bisphenol A/epichlorohydrin resins, low viscosity cycloaliphatic resins, and low viscosity tetra-functional resins (column 5, line 6 through column 10, line 67); and a hardener selected from the group consisting of liquid aromatic amine hardeners effective to provide glass transition temperatures in excess of 250°F, the blend being essentially free of methylenedianiline (MDA) and vinylcyclohexene dioxide (Abstract; column 11, line 1 through column 12, line 67); embedding fiber reinforcement in the blend (column 13, lines 40-48); and curing the fiber-reinforced blend to form the composite material (Abstract);

(7) wherein the fiber reinforcement is a high tensile strength intermediate modulus carbon fiber (column 13, lines 40-48) and the method further comprises forming the blend with a reactive diluent comprising diglycidyl ether of 1,4-butanediol, the diluent also being essentially free of (MDA) and vinylcyclohexene (column 9, lines 9-17);

Art Unit: 1712

(8) wherein the blend further comprises a liquid cure catalyst comprising alkylated onium salt, substituted sulfur compound, substituted sulfide, ethylthioethanol, and fluoroboric acid (column 13, lines 11-23).

In all of the above claims, Kamae et al. do not explicitly disclose: (a) an inter-laminar shear strength of at least 6.5 ksi dry at 75°F and at least 3.5 (or 3) ksi dry at 250°F; and (b) a fiber tensile strength of at least 650 ksi. It has been found that, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). In light of this and the fact that Kamae et al. satisfy all of the material limitations of the instant invention, it appears that these properties would have been inherently present in the composition of Kamae et al.

Furthermore, because Kamae et al. use their composite in the same field of endeavor (space/air craft) as that of the instant invention, one of ordinary skill in the art would be motivated to form their composition with such high performance properties.

Therefore, if not inherently present in the composition of Kamae et al., one of ordinary skill in the art at the time of the invention would have been motivated to formulate the composition of Kamae et al. to have the claimed strength properties because spacecraft and aircraft materials require high performance properties, including inter-laminar strength and tensile strength.

Art Unit: 1712

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael J. Feely
Primary Examiner
Art Unit 1712

July 24, 2005